

# MARINE REVIEW.

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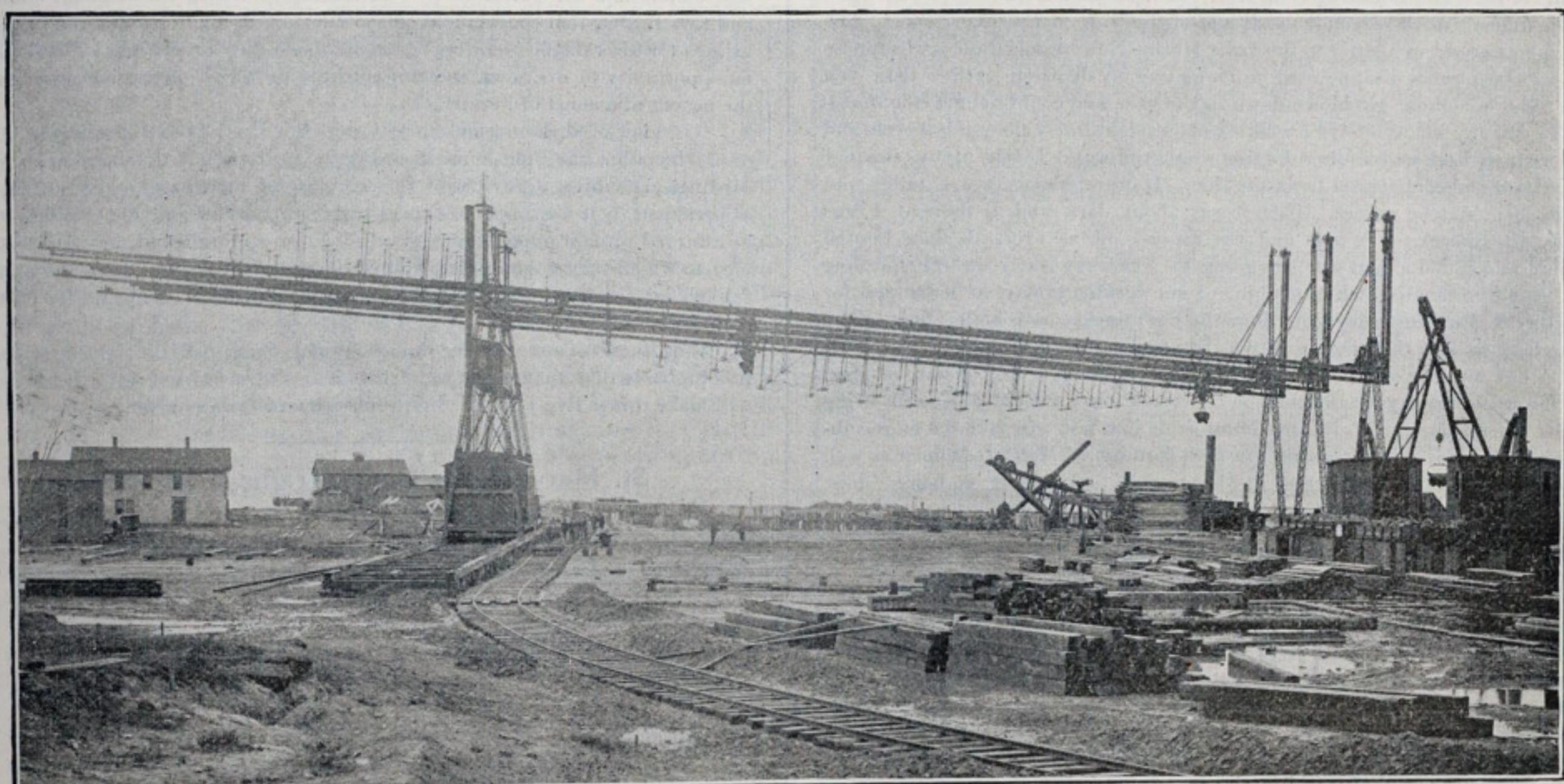
## Conneaut Receives Its First Cargo of Ore.

Many predictions are being made of a big output of ore from the Lake Superior district next season, especially on account of the opening up of the new Mesaba range. The railways and dock companies of all Ohio ports are preparing for increased receipts, but the greatest addition in the way of new docks is at Conneaut, where Col. S. B. Dick and A. C. Huidekoper of Meadville, Pa., two capitalists well known to the coal and iron interests of Pennsylvania, have built up a harbor and docks, which are connected by about 50 miles of new railway with a most prosperous portion of the Pittsburgh coal and furnace districts. Arrangements already made with furnace owners and mine operators assure to Conneaut a considerable portion of the lake business next season.

The first cargo of ore was received this week from the steamer C. J. Kershaw, and a number of boats consigned to the

## First Move Towards Strengthening Steel Vessels.

Insurance companies have not as yet given any instructions to general agents on the lakes as to what course to pursue regarding risks on steel vessels for next season, but it is more than probable that a general meeting of underwriters will be held during the winter, when the question of classification will be thoroughly discussed. In the meantime all steel vessels now under construction are being strengthened. The most important feature of improvement in new boats, which is being generally adopted, is in the upper or shear streaks on the sides of the vessel. Double plates are being put in with but-straps inside and out. In all steel vessels where weakness has been shown the first signs of breaking occur at about the middle of the boat, or at the second hatch forward of the boiler house. It is admitted, accordingly, that a part of the weakness in the upper part of the vessel, where strength is required the most, is due largely to the



DOCK EQUIPMENT AT CONNEAUT, LAKE ERIE.

new docks will be unloaded before the close of navigation. Without any of the improvements assured by a first appropriation of \$40,000 from the general government, there is now a channel of 18 feet in depth and 120 feet wide, extending for a length of 2,000 feet along the dock property, and the natural advantages of the harbor are such that a similar channel can be made for two miles or more along the river for less money than at any other port on Lake Erie. The accompanying engraving shows the result of an expenditure of about \$250,000 for dock equipment. Houses are going up at a rapid rate in the town. The railway, known as the Pittsburgh, Shenango & Lake Erie, reaches Pittsburgh over the Pittsburgh & Western from Butler, Pa. J. T. Blair, of Greenville, Pa., is superintendent of the railway, and Capt. E. Day, formerly superintendent of the Nypano docks, Cleveland, is in charge of the new docks. There are on the docks three ore hoists manufactured by the Brown Hoisting and Conveying Company of Cleveland, and two revolving steam traveling derricks put up by the Excelsior Iron Works Company, also of Cleveland. The dredging work was done by L. P. & J. A. Smith, of Cleveland.

cutting out of space in the deck for hatches, and it has been decided in the case of several new vessels to put double plates in the deck between the hatches and the sides of the vessel. There is no better or safer ship made than a properly built steel one, and the talk of returning to wooden ships is absurd, but owners and builders must agree that such important features as a proper proportion of depth to length and breadth can not be ignored for the purpose of increasing capacity.

Capt. A. R. Manning, of Cleveland, who has had years of experience in vessel business on the lakes, suggests that steel vessels now thought to be weak in construction might be strengthened without great cost by attaching angle irons to the frames, and fastening to them steel arches of about 18 inches width, one belly up and the other belly down, running the full length of the vessel on either side.

## CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,  
No. 13 Western Union Building, CHICAGO, ILL., Nov. 10.

There is a great deal of quiet talk among underwriters here as to the effect the loss of the Western Reserve and the Gilcher will have upon lake insurance next season. About the middle of December another meeting of lake underwriters will be held in New York at the call of the American Ship Masters' Association, with regard to having that classification adopted on the lakes. It is now quietly said that the insurance companies themselves will step in and have something to say about the classification and rating of lake boats. As it has been, few general agents cared to place themselves in the position of reformers. That would have made enemies among many vessel owners, and a general agent can not afford to needlessly antagonize anyone. No one can blame them for this. They make their money out of commissions, and beyond a feeling of satisfaction or otherwise, it is quite indifferent to them whether their companies make or lose. While every general agent around the lakes might think that the change of classification and rating is desirable, it is very likely that not one would of himself have made a serious effort to secure a change. The two disasters have attracted the attention of the insurance companies to their lake business, as nothing else would have done, and it is reported that the companies will take hold of this question, without regard to their general agents and revolutionize the present system of lake underwriting.

When vesselmen read in the morning papers column after column of news from lake wrecks from one end of the lakes to the other, they little realize the amount of work, that correspondents, many of them situated long distances from a telegraph office have had to do the day before. The heroic efforts of many of these correspondents to get their news to the outside world are entitled to all credit. The following from Deer Park, Mich. is a fair sample of some of the difficulties correspondents at out-of-the-way places experience. The statements are from a letter to the Lake Marine News Association. "I suppose you were somewhat disappointed in not getting my dispatch earlier than you did. But our phone got blown down in the gale, and could not get the message to you any sooner. After walking about eight miles along the beach and then getting back and finding the line would not work I felt pretty sick. I got a team and commenced to fix the line. I drove about twelve miles and made about sixteen splices. Then it was about dark and I thought I was O. K., drove back to the park and was as bad off as ever. I then hunted around and found a man who was going to Newberry early in the morning and gave him the dispatch to take in. I am working to-day to make up for the day I lost yesterday, but hope the next time to have better luck. The wind blew so hard that there was tree after tree across the road."

A new steamer which is to have temporary passenger accommodations during the world's fair year and then be converted into a freighter is still being talked about here, and it is not improbable that talk will take the more substantial form of a contract within the next fortnight. Many vesselmen as well as outside capitalists are now in the project. Figuring is being done with the Chicago Ship Building Company.

## A Canadian Vessel Owner's Argument.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., Nov. 10.—The new steel steamer which the Montreal Transportation Company will have built in Ireland this winter will be 253 feet over all, and cost \$150,000. Captain Gaskin, the outside manager for the Company here, was asked why they did not have the boat built in Kingston. He replied in effect that workmen here did not do a fair day's work for a fair day's wages. Instead of working with their employers and doing the best they could in their interests, they combined against them and prevented employers from making financial successes of their undertakings. He further claimed that the shipbuilders received higher wages in the United States, they did far more work and fully earned their money. When Canadians went over there they had to work much harder than they did while in Canada. Unless workmen made greater effort in behalf of their employers Kingston would never become a manufacturing center.

It is rumored in political circles that the government intends handing over the Intercolonial Railway to the Canadian Pacific Railway Company for a consideration not yet mentioned. If the Company secures the road it will establish a line of steamers between Halifax and the old country that will cross the ocean in three days. The Intercolonial has been a white elephant on the hands of the government for many years, inasmuch as the officials are far too numerous and high-salaried for the amount of freight and passengers carried.

It now looks as if the reciprocity in wrecking bills, passed by the American and Canadian governments will amount to nothing, for some time at least. It appears that the authorities at Washington desire that Canadian canals be included in the term Canadian waters, which the authorities at Ottawa are determined to oppose. No doubt it would have been allowed had not the recent canal difficulty arisen, but as the matter stands at present it would be safe to say that unless the "Soo" tolls are removed reciprocity in wrecking will not be afforded. Further, the government alleges that it would be very weak on

their part to spend a large extra sum on the Canadian "Soo" in order to hurry its completion, and then not reap any advantage whatever from it. Another fact in this connection is that the Hon. Geo. A. Kirkpatrick, who had charge of the bill in parliament and secured its passage, has been appointed lieutenant governor of Ontario, and is therefore unable to take the interest he would like to in the matter.

## Washington Criticism of the Light House Board.

Special Correspondence to the MARINE REVIEW.

WASHINGTON, D. C., Nov. 10.—In direct contrast to the views expressed editorially by the Post of this city, concerning the action of the executive officers of the light-house board in the Ludlow matter, that paper publishes an editorial more favorable to Col. Ludlow, and says, and declares with emphasis, that the recent action of the board in relieving Col. Ludlow and Commander Heyerman from further service "evidently does a gross injustice to two meritorious officers." The Post says that the more closely the case is scrutinized the worse it looks, and adds that it "clearly calls for intervention by the treasury department, in order that a great wrong may be set right." The editorial succinctly reviews the circumstances leading to the case, and concludes that the official reason assigned for the removal of the officers is not in subordination, but "failure to comply promptly with recent instructions; instructions that unquestionably involved a statutory offense."

"One of the most surprising features of this extraordinary performance," the editorial continues, "is that after Col. Ludlow and Commander Heyerman had been relieved and their successors appointed, the latter were given full discretion as to placing the lights, and adopted exactly the plan that Col. Ludlow had recommended, and which the board now approves." The editorial further emphasizes the statement by reproducing in italics the language quoted, and says further that the whole credit is due to Col. Ludlow, and the "return he gets for his valuable services is a relief from duty on charges which he has no opportunity to disprove, and for confronting which he cannot even have the benefit of a court of inquiry."

"In view of these circumstances," says the Post, "and especially in view of the fact that the light-house board is no military board, and that its proceedings are subject to review by the secretary of the treasury in his capacity as president, is it too much to expect that Col. Ludlow and his associate may be afforded prompt opportunity for vindication and relieved, not from a service to which they have rendered laudable contribution, but from the wrongful and injurious attitude which they have been made to occupy on the official records?"

With the Post's regard for fair play, and persistency in righting wrongs, it is probable that that paper, now that it has thrown itself into the breach, will make things lively for the light-house board from now on.

## St. Mary's Falls Canal Traffic in October.

The total number of net tons of freight passing through the St. Mary's Falls canal in November was 1,432,536, of which 1,013,316 tons was eastbound and 419,220 tons westbound. Following is a classification of the tonnage:

	Eastbound.	Westbound.
Coal .....	.....	352,027 tons.
Flour .....	782,316 bbls.	81 bbls.
Grain .....	.....	16,145 bu.
Corn .....	181,000 bu.	.....
Wheat.....	6,098,857 bu.	.....
Building stone.....	3,382 tons.	.....
Copper.....	8,026 tons.	.....
Manufactured iron.....	.....	9,592 tons.
Iron, ore.....	594,436 tons.	.....
Iron, pig.....	7,936 tons.	.....
Salt .....	.....	47,405 bbls.
Lumber.....	71,574 M feet	.....
Silver ore.....	850 tons	.....
Unclassified freight.....	13,953 tons.	48,150 tons.
Passengers.....	639	642

## Record of Speed and Big Cargoes.

[Masters or owners of freight boats are invited to report improvements on this list.]

Iron ore: Maritana, Minnesota Steamship Company of Cleveland, 4,260 gross, or 4,771 net tons, Escanaba to South Chicago; Maryland, Inter-Ocean Transportation Company of Milwaukee, 3,663 gross, or 4,103 net tons, Escanaba to South Chicago, draft 17 feet 4 inches.

Grain: E. C. Pope, Eddy Bros. of Bay City, 125,730 bushels of corn, Chicago to Buffalo; same steamer, 120,191 bushels of wheat, Chicago to Buffalo; Onoko, Minch estate, Cleveland, 113,839 bushels of wheat, Chicago to Buffalo; W. H. Gilcher, J. C. Gilchrist of Cleveland, 113,820 bushels of wheat, Chicago to Buffalo.

Coal: E. C. Pope, Eddy Bros. of Bay City, 3,950 net tons anthracite, Buffalo to Chicago.

Speed: Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour.

**Iron Mining.**

## VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter &amp; Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	\$100 00	\$.....	\$ 63 00
Champion Iron Company.....	25 00	.....	58 00
Chandler Iron Company.....	25 00	.....	45 00
Jackson Iron Company.....	25 00	.....	75 00
Lake Superior Iron Company.....	25 00	40 00	42 00
Minnesota Iron Company.....	100 00	70 00	73 00
Pittsburgh & Lake Angeline Iron Co. ....	25 00	.....	145 00
Republic Iron Company.....	25 00	10 00	12 00
Ashland.....	25 00	.....	.....
Section Thirty-three.....	25 00	.....	5 00
Brotherton.....	25 00	2 00	2 50
Iron Belt.....	25 00	.....	2 10
Aurora.....	25 00	8 25	10 00

Corrigan, Ives & Co., Tod, Stambaugh & Co., and Oglebay, Norton & Co. are among Cleveland sales agents who have already made arrangements for handling the ore of four or five Mesaba mining companies next season, and it is understood that Pickands, Mather & Co. are also about certain to have some of the new ores for sale. In fact it will not be surprising if all of the sales agents get a share of the new business before spring. Corrigan, Ives & Co. represent the Cincinnati and Hale properties. The first cargo, which is from the Iron Mountain mine, will be delivered to Oglebay, Norton & Co. at Cleveland in a few days. It is now bound down on the McDougall barge 102. The Chandler mine, Vermillion range, which is close onto a record of 650,000 tons in shipments for the present season, declared another regular dollar dividend on the 1st inst.

Shipments of iron ore from Two Harbors up to and including Wednesday, Nov. 2, aggregated 1,103,320 gross tons, of which 625,962 tons were from the Chandler, 461,876 tons from the Minnesota, 2,525 tons from the Pioneer and 12,930 tons from the Zenith mine. On the same date shipments from Ashland aggregated 2,128,355 tons, of which 1,070,123 tons were from the Wisconsin Central docks and 1,058,232 tons from the Milwaukee Lake Shore and Western docks. The total movement from Ashland to the date named is only 42,201 tons behind the entire shipments of 1890, the year of the greatest shipments, while the movement from Two Harbors is already 223,306 tons ahead of the entire shipments from that port in 1890 and 209,039 tons ahead of 1891. More ore was shipped from Two Harbors in 1891 than in 1890.

A correspondent in the Engineering and Mining Journal says that Lake Superior mines irrespective of the new properties being developed on the Mesaba range can, if necessary, ship 14,000,000 tons of iron ore in 1893. This is a mistake. There is neither mining capacity nor dock capacity at either end of the lake route for such a product.

The Duluth Ore Company has leased land on what is known as the Berringer forty of the Biwabik, Mesaba range, from John R. Berringer, John T. Jones and J. B. Weimer, on a guarantee of an annual production of 100,000 tons at 50 cents a ton royalty.

**To Build Another Very Fast Launch.**

Messrs. McBride Brothers of Philadelphia, owners of the fast steam launch Yankee Doodle, which was destroyed by fire a few weeks ago, will probably build during the coming year another boat equal or superior to the burned launch in speed. The Yankee Doodle was probably the fastest boat of her class in the world. Her speediest record was made on July 4 last, when she ran a mile on the Schuylkill river in 2 minutes  $1\frac{3}{5}$  seconds, or at a rate of almost thirty miles an hour. The hull was 50 feet long and  $6\frac{1}{2}$  feet beam; displacement, 4 tons; draught, 15 inches. Engine, 160 horse power; two 8x8 inch cylinders. Screw, 34 inches, 5 feet 10 inches pitch; two blades; 550 revolutions per minute. The boiler was quite remarkable. It had 410 one-inch steel tubes, tested to 1,900 pounds to the square inch hydrostatic pressure; 360 feet tubular heating surface; weight, 2,000 pounds; grate surface, 8 feet; steam dome, a peculiar feature, 2x4 feet; usual boiler pressure, 150 pounds.

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**Coal Movement to Lake Superior.**

As shown by the following table, coal shipments, hard and soft, to Lake Superior ports from the opening of navigation to Nov. 1, were 370,204 tons in excess of shipments on the corresponding date in 1891:

Months.	1892, net tons.	1891, net tons.
April .....	151,495	10,919
May .....	401,729	404,698
June .....	462,564	390,674
July .....	542,003	436,254
August .....	414,448	428,842
September .....	363,673	351,517
October .....	352,027	294,831
Total.....	2,687,939	2,317,735

The figures are from the monthly statements of Sault canal business. On Nov. 1 hard coal shipments from Buffalo to all upper lake ports were only 366,559 tons ahead of the movement on the same date last year, so that it is still evident that the great bulk of the gain in Lake Superior shipments is soft coal.

**The New Navy.**

Last Saturday the twenty-knot protected cruiser No. 6, Olympia, was launched from the Potrero yard of the Union Iron Works, San Francisco. The Olympia has 5,870 tons displacement, 13,500 horse power engines, is required to make 20 knots an hour, and her fighting equipment consists of four 8-inch and ten 5-inch guns, and six torpedo tubes. Her total cost is \$2,387,969. The Oregon is still on the stocks at this yard and the Monterey is being completed. During the year this company will have completed for the government three war ships, having a total displacement of 20,070 tons, and has built for merchant service three steamers, having a total displacement of 6,127 tons. From the Brooklyn navy yard the Cincinnati was launched Monday. She is of 3,187 tons displacement, and her total cost is \$1,833,388.

Bids for the sea-going battle ship of 11,296 tons, and for the Brooklyn, an armored cruiser of 9,153 tons displacement, will be opened by the navy department Dec. 15.

**No Days of Grace on Inspection Certificates.**

Among the printed decisions of the treasury department for August and September, 1892, is one (13,266) directed to the collector of customs at Milwaukee, Wis., defining the duties of collectors of customs and other officers relative to steamers running after expiration of certificate of inspection. The department holds that the certificate of inspection expires at a date one year from the date of inspection and that the statutes are violated if the time is allowed to over run a single day. The letter to the Milwaukee collector quotes the law on the subject and adds: "If, as you state, it has been a custom for many years in your district to allow 'a lapse of more or less time between the expiration of the time for which the boats were inspected and the new inspection,' you are informed that the department desires that such custom shall cease, and that all violations of law be duly reported. The department will then exercise its discretionary power in enforcing, remitting, or mitigating the penalties as the facts may determine, giving careful consideration to any mitigating circumstances that may be presented."

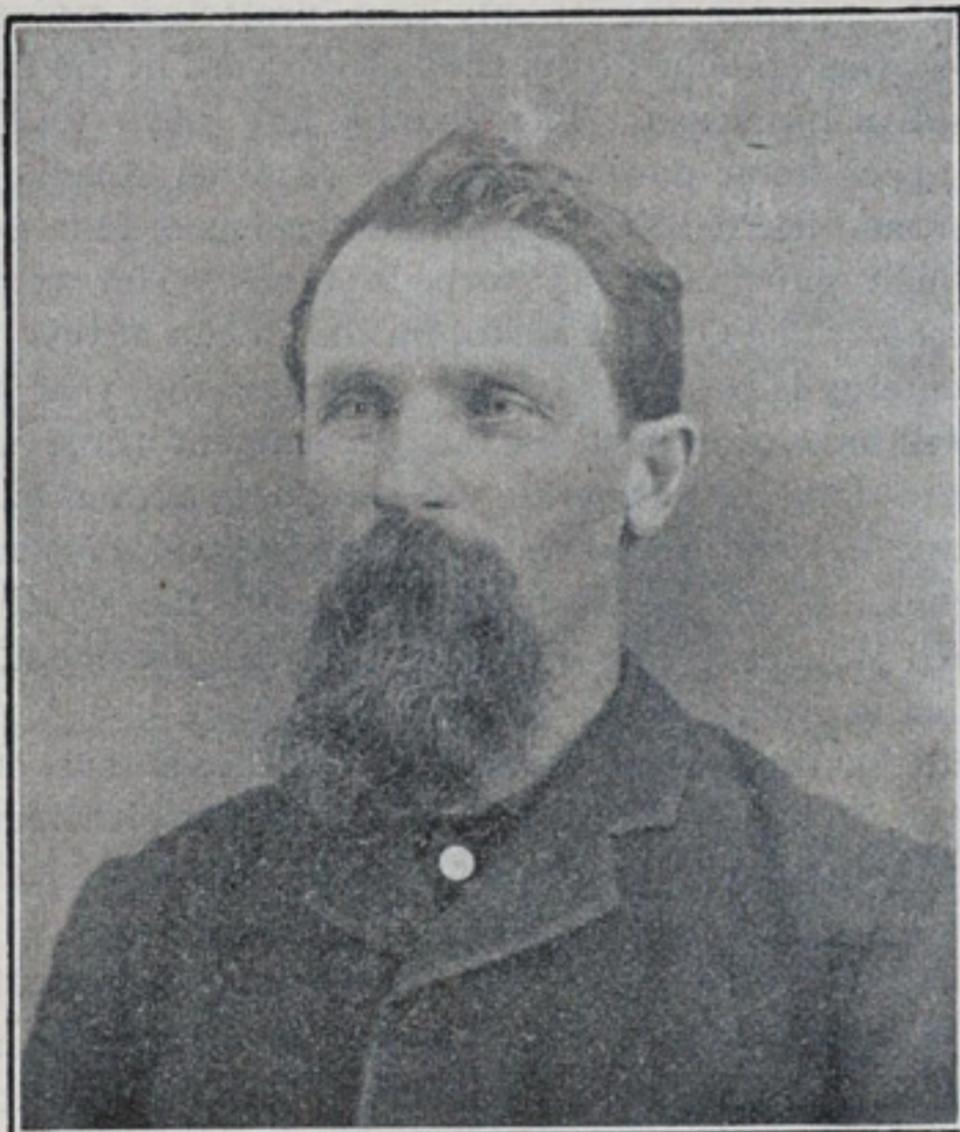
**Marine Review Liner Exchange.**

If you want new or second-hand machinery of any kind, want to buy a steambarge or steamer, or sell anything in this line, write a postal card to the MARINE REVIEW. We are almost certain to have what you want advertised in our columns or in our liner exchange. This costs you nothing, except the expense of being a subscriber to the REVIEW. We never fail to get you an inquiry or reply to this liner advertisement. Over 150 business concerns and private parties have been accommodated with this liner exchange.

## Late Capt. Leeds H. Weeks.

Capt. Leeds H. Weeks, who was lost with the crew of eighteen men on the steamer W. H. Gilcher, was a thorough ship carpenter and might have found remunerative employment ashore, but a story told since the disaster by Mr. J. C. Gilchrist, managing owner of the Gilcher, will serve to show how men of many years service as navigators on the lakes, as well as the sea, entertain into old age an attachment for a life that seems to most landsmen entirely void of fascinations and fraught with great danger.

"At the ship yard in Vermillion where repairs are made to our vessels during the winter, we contemplated," said Mr. Gilchrist, "the construction of a few wooden boats, and I asked Capt. Weeks to remain ashore and superintend the work. His answer was that he was a sailor and could not be contented ashore. On his disposition in the matter the project was mainly dependent, and a steel boat, the Gilcher, was contracted for, Capt. Weeks being placed in command. He was fearless as a vessel master but a man of excellent judgment."



LATE CAPT. LEEDS H. WEEKS.

Capt. Weeks was one of a large number of residents in the town of Vermillion, O., who followed the lakes from boyhood. His father, L. D. L. Weeks, was from New England, and was also interested in a small way in vessel property. In the spring of 1880 Capt. Leeds Weeks, who had worked at ship carpentering for a number of years and had also sailed a small schooner called the Idaho, which was owned by his father, took command of the schooner Homer H. Hine for the Gilchrists. He was advanced the next season to the schooner C. P. Minch and later to the P. S. Marsh, W. H. Crosthwaite and B. F. Bruce. His first steamer was the H. B. Tuttle, from which he was promoted to the Oregon and then to the J. C. Gilchrist, which he brought out in 1888. He was proud of the W. H. Gilcher, the flag ship of the fleet, which he also brought out later, and in which he had no thought of fear from heavy weather. It will be remembered that a few years ago, while in the J. C. Gilchrist, Capt. Weeks towed the schooner Alverson down from the head of Lake Superior in December, and in making his way through Mud lake had to secure the assistance of tugs to break a channel through the ice. He had just finished the details of a comfortable home in Vermillion, but had no thought of retiring, although he was about forty-eight years of age.

The Sheriffs Manufacturing Company of Milwaukee a few days ago shipped a 6-foot 10-inch wheel to Memphis. A wheel is now being gotten out for the Inter-Ocean company's steamer Manchester.

## Trial of Steamer Chicora.

This trial was made on the steamer's regular trips between Chicago and St. Joseph, a distance of 60 miles. Two runs were made. The first trial was made for the purpose of ascertaining the maximum power of the machinery. A strong head wind was blowing with no sea on. Steam was kept up to 160 pounds, with full throttle. Cards were taken every hour throughout the trial. Steam, vacuum, revolutions, air pressure and temperature of chimney were noted with each set of cards taken. The engine was kept at full speed for about one and one-fourth hours. No difficulty was experienced in keeping full pressure of steam in the boilers, with an air pressure of 1½ inches at the fan, and ½ inch in the ash pit. It was found that in order to reduce the speed to about 94 revolutions per minute without throttling, the high pressure valve had to be linked up to full extent of arm, and at 88 revolutions all three valves had to be linked up.

The second trial was made for the purpose of finding the best point of cut-off, to obtain as nearly as possible an equal distribution of power in the cylinders. The best results were obtained by working the intermediate in full gear, and linking up the low pressure 1 inch from full gear. As no means were at hand for weighing or measuring the coal, no account was taken of amount used during trials.

VESSEL.			
Length over all.....	209' 0"		
Length, keel .....	196' 4"		
Breadth .....	34' 8"		
Depth .....	15' 3"		
Mean draft at trial.....	9' 8"		
Displacement at trial, tons.....	1,240.		
ENGINE.			
Cylinders diameter, inches.....	20" 33" and 54"		
Cylinders stroke.....	42"		
Propeller diameter.....	11'		
Propeller pitch.....	17'		
BOILERS.			
Number.....	2.		
Diameter.....	12'		
Length .....	11' 6"		
Number of furnaces, each boiler .....	2.		
Diameter of furnaces .....	3' 7"		
Grate area, square feet .....	82.32		
Heating surface, square feet.....	3,162.64		
Ratio, heating to grate, square feet.....	37.7 to 1		
Howden's system of forced draft.....			
Diameter of fan .....	48"		
Area of air main, square inches.....	576.		
Size of fan engine.....	7"x7"		
PERFORMANCE.	Maximum.	94 Rev.	88 Rev.
Boiler pressure, pounds.....	160.00	160.00	160.00
Vacuum, inches.....	21.00	21.50	21.50
Revolutions per minute.....	102.00	94.00	88.00
Indicated horse power, H. P. Cylr.....	292.69	299.73	230.77
Indicated horse power, Int. Cylr.....	563.66	444.77	317.50
Indicated horse power, L. P. Cylr.....	648.63	453.45	393.73
Indicated horse power, total .....	1504.98	1197.95	942.00
Rev. of fan, per min .....	470	470	470
Rev. of fan, engine, per min .....	220	220	220
Temperature of chimney, Fah.....	630°		580°
Heating surface per I. H. P., sq. ft .....	2.10	2.64	3.35
I. H. P. per sq. ft. of grate .....	18.16	14.55	11.44
Air pressure, ash pit, ins. water.....	6.625	.625	.625
Air pressure, main, ins. water.....	2.625	2.875	2.875
Distance run, miles .....		60	
Running time, hours.....		4	
Speed of vessel, miles per hour .....		15	
Slip of propeller, per cent.....		17.3	
Result obtained by working intermediate full and linking low pressure up to 1 inch from full gear.			
Boiler pressure, pounds.....	160		
Vacuum, inches .....	21.5		
Revolutions per minute .....	96		
Indicated horse power, H. P. Cylinder.....	324.67		
Indicated horse power, Int. Cylinder.....	437.88		
Indicated horse power, L. P. Cylinder .....	480.35		
Indicated horse power, total .....		1242.88	

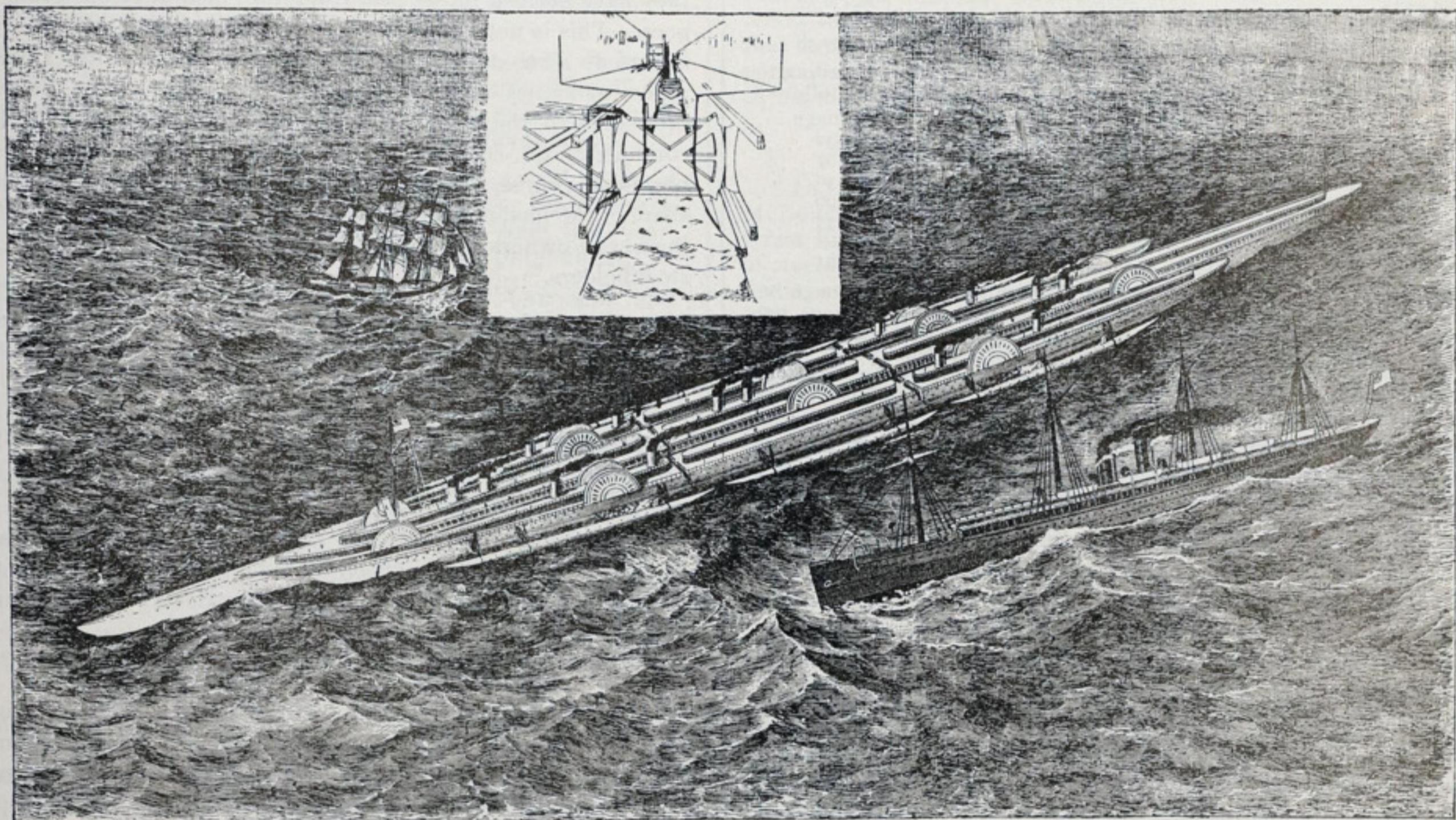
The Chicora was built by the Detroit Dry Dock Company, ship and engine builders, and is owned by the Graham & Morton Transportation Company of Chicago.

## Iron Ore Shipments and Lake Freights.

Iron ore shipments from all Lake Superior ports to Nov. 1 aggregate 7,837,758 gross tons, against 6,017,789 tons on the same date in 1891 and 7,440,574 tons in 1890. Thus the shipments this season are shown to be 397,184 tons ahead of any previous season. The lake freight market is strong and there is still enough ore and grain to come down to warrant the belief that 5 cents or better will be paid on the last cargoes from the head of Lake Superior to Buffalo. Ore rates at this writing are 90 cents from Escanaba, \$1.10 from Marquette and \$1.30 from Ashland to Ohio ports.

## Proposed Atlantic Passenger Liner.

The accompanying illustration is reproduced from the *Scientific American*, New York. The design is from James Graham, who claims that the immense Atlantic liners building now have reached the limit in profitable increase in size and speed, and that something radically different from the present craft must be provided for the Atlantic passenger service of the future. The design consists of a system of nine hulls of special model connected in three trains of three hulls each, the center train being the principal part of the craft, and extending 225 feet forward and 200 feet aft of the other two trains, the whole forming an outline similar to that of an ordinary ship. The total length would be 1,440 feet, breadth over three trains 142 feet, to outside of floats 180 feet. Other dimensions are: Midship draught of center train, 18 feet; midship beam at water line, 45 feet; midship beam at main deck, 60 feet; midship draught of outer trains, 12 feet; midship beam at water line, 27 feet; midship beam at main deck, 35 feet. The displacement of the center train is 15,000 tons and of outer trains, each, 5,250 tons, or a total displacement of about 26,000 tons. The propelling power would consist of seven engines, three in center train of 10,000 horse power each;



PROPOSED DESIGN FOR AN ATLANTIC LINER.

two in forward sections of outer trains, 4,000 each; two in stern sections, 6,000 each, or a total of 50,000 horse power, driving seven pairs of paddle wheels of 52 and 56 feet diameter, 6 and 8 feet wide, and having a dip of 8 feet.

This steamer would carry no cargo, and, owing to the system of construction, would require no ballast, so that the entire tonnage capacity would be available for boilers and engines. The speed to be developed by paddle wheels is estimated at 35 knots, and there would be accommodation for 4,000 passengers. The couplings for the different trains is shown in the engraving. The designer claims that in structural strength the boat would excell the present steamers, and the estimated cost is only \$8,000,000. It is suggested in the article that freight should be carried separate from passengers, and that for \$200,000 a whale-back package freighter could be built that would carry more freight than the *Majestic*, which cost \$2,000,000. The particulars and design are reproduced more as a curiosity than as a representation of the coming Atlantic liner.

The *William F. Hallsted*, a steam vessel owned and built at Buffalo, is the only craft receiving an official number last week from the bureau of navigation. The boat's tonnage is 37.75 tons gross and 19.09 net and the number assigned to her is 81,414.

## Lake Carriers' Advance Wages.

The following schedule of wages, adopted by the Lake Carriers' Association, takes effect Nov. 10:

ON STEAMERS.	OLD RATES, PER MONTH.	NEW RATES, PER MONTH.
Helpers .....	\$15 00 to \$20 00	\$20 00 to \$25 00
Firemen.....	40 00 " 45 00	45 00 " 52 50
Wheelmen.....	40 00 " 45 00	45 00 " 52 50
Lookout.....	40 00 " 45 00	45 00 " 52 50
Deck hands.....	20 00 " 25 00	25 00 " 30 00
Oilers, (when car- ried).....	40 00 " 45 00	45 00 " 52 50
Firemen—Fitting out and laying up, \$1.50 per day and board themselves.		
ON CONSORTS AND SAIL.		
1st Mates.....	\$50 00 to \$65 00	\$50 00 to \$65 00
2d " .....	40 00 to 45 00	50 00 " 55 00
Cooks .....	35 00 " 45 00	35 00 " 45 00
Seamen.....	40 00 " 45 00	45 00 " 52 50
Boys.....	20 00 " 30 00	30 00 " 35 00

## Work of the Ship Yards.

As shown in the list of forty-nine new vessels printed last week, Capt. James Davidson will put down at his yard in West Bay City a wooden steamer 326 feet long, in addition to the four schooners now under way.

For several years Mr. Dan P. Eells of Cleveland has been considering the building of a steam yacht, and now that he has sold the *Winifred* to George H. Russell and others, Detroit, Mich., for \$8,000, he will probably give an order for a boat to come out next spring. The *Winifred* was built in Brooklyn, N. Y., but her present engines were put in by Clough & Witt, Cleveland. It is probable that the order will go to some lake builder.

A contract between the Vessel Owners' Tug Line of Cleveland and the Union Dry Dock Company of Buffalo for two new harbor tugs was closed a few days ago. One will be 84 feet long, 19 feet beam and 11 feet 6 inches depth of hold, and the other 76 feet long, 17 feet beam and 10 feet 6 inches depth of hold. The engines of the larger tug will be 25x28 inches and that of the smaller one 21x24 inches. Boilers in both cases will be allowed 150 pounds pressure. The Buffalo company will also build for the Hand & Johnson line of that city a harbor tug on the model of the *Townsend Davis*.

## MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, . . . . . } PROPRIETORS.  
F. M. BARTON, . . . . . }  
HOMER J. CARR, . . . . . Associate Editor and Manager Chicago Office,  
Western Union Building, 110 LaSalle Street.

Published every Thursday at No. 516 Perry-Payne Building, Cleveland, O.

SUBSCRIPTION—\$2.00 per year in advance. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,600 vessels, measuring 1,154,870.38 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of vessels of 1,000 to 2,500 tons on the lakes on June 30, 1891, was 310 and their aggregate gross tonnage 512,787.58; in all other parts of the country the number of this class of vessels was, on the same date, 213 and their gross tonnage 319,750.84. The classification of the entire lake fleet is as follows:

Class.	Number.	Tonnage.
Steam vessels	1,592	756,751.53
Sailing vessels	1,243	325,131.06
Canal boats	703	72,515.42
Barges	62	20,472.37
Total	3,600	1,154,870.38

Tonnage built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

No. of boats.	Net Tonnage.
1887	152
1888	222
1889	225
1890	218
1891	204
Total	1,021

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 228 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014. Number of boats through St. Mary's Falls canal in 1891, 225 days of navigation, 10,191; tonnage, net registered, 8,400,685. Number of boats through Suez canal during 1891, full year, 4,207; tonnage, net registered, 8,698,777.

Entered at Cleveland Post Office as Second-class Mail Matter.

COMMANDER R. D. EVANS, recognized in naval circles as a capable and courteous officer, will in a few days succeed Commander George W. Coffin as naval secretary of the light-house board, Commander Coffin going to sea. Commander Evans was formerly connected with the board in the same capacity and is thoroughly familiar with the duties of the position. The change is not a surprise to lake vessel owners, who have of late had some very unpleasant relations with Commander Coffin and other executive officers of the light-house institution. Neither will it be a surprise if other changes are made very soon, but action of this kind will not satisfy the vessel owners of the lakes, who can not withdraw from the unanimous and determined demand that full justice must be shown to Col. Ludlow and Commander Heyerman. A great wrong has been done them. Officers entitled to praise have received censure. While vindicated in fact by every action of the board since their removal, and by this last move toward reorganizing the board they are not officially acquitted and are still under condemnation. Their official records have been sullied by a serious and baseless charge in the treasury department. No court of inquiry can obliterate it, for such a court can only come from the war and navy departments. The secretary of the treasury has the power to set it right and ought to do so. He is recognized as the official and responsible head of the light-house service, and the vessel interests of the lakes still look confidently to his taking just and effective action as soon as the urgent and onerous demands upon his attention leave him time to examine the situation and recognize the true equities of the matter.

WITH the completion of the St. Mary's Falls canal and 20-foot channel work now fully provided for by the system of continuous contracts, Gen. O. M. Poe, the veteran army engineer, will have merited retirement, which will be due him at the close

of the short period required to finish these great works. The appointment of his successor will be of the greatest importance to the lake marine. There is not in the engineer corps of the army today a man better fitted than Col. Wm. Ludlow to succeed Gen. Poe in charge of the northwestern lake division, and the vesselmen will make a mistake if they do not keep this matter in mind. In all the controversy between the shipping interests of the lakes and the light-house board over the case of Col. Ludlow with that institution it has been admitted by everybody concerned that he is one of the most valuable men in the service. Officers more scientific may be found in the corps, but Col. Ludlow is best fitted to succeed to the important position from which Gen. Poe is soon to retire with full honors.

THE impression has gone out that the Chicago Insurance Company, which was organized recently, and whose stockholders are mainly vessel owners and grain shippers, will take from the vessel brokers of Chicago and Duluth the commissions which they have derived in the past from the insurance on grain cargoes. This is not true. The new insurance company is organized to do a business in the insurance of grain cargoes just as other companies are now doing and its agents will be the vessel brokers as in the past. There will be no change in broker's commission on account of the new organization, but it is expected, of course, that the Chicago company will get a large share of the business, on account of the influence secured through the vessel owners and grain shippers who make up its list of stockholders.

AS A result of a disposition to co-operate with the vessel owners in all matters pertaining to the advancement of the shipping interests, Col. Jared A. Smith, district engineer at Cleveland, succeeded last week in having funds from the Cleveland breakwater appropriation applied to removing a sand bar which had formed at the mouth of the river during the recent storms, and which had almost completely blocked the harbor. Col. Smith's action in this matter is deserving of praise, as it shows that the right kind of an officer in such a position does not take refuge under red tape methods in department rules when an emergency arises.

### Discovery of the Ashland Mine.

Iron ore dealers and others on the lakes who are acquainted with the Hayes brothers, owners of the famous Ashland mine of the Gogebic district, have heard many times the tale of a dream attending the discovery of the great iron range. A western publication presents the latest version of the yarn. "Some years ago," says this exchange, "a widow named Hayes had a dream that impressed her very strangely. She dreamed that at a certain point in the Gogebic range of mountains in northern Michigan there existed a large body of iron ore. Going to the point indicated in her dream she dug down a few feet under the surface and came upon an immense deposit of red hematite ore. She acquired title to the property before her discovery became known and in a short time realized several million dollars from her find. Wishing to settle down for life she married a young husband and has for the past four years been engaged in constructing the famous Hayes mansion in the Santa Clara Valley, California, six miles from San Jose, where she purchased 1,000 acres of the finest land in that valley. The Hayes mansion when completed will, perhaps, be the most expensive residence on the Pacific coast, and no visitor is allowed to leave San Jose before visiting it. The woman is now traveling in Europe with her fresco artist selecting designs for the ceiling and walls of the mansion."

The Hayes family was made wealthy through ownership of the Ashland mine, and they own an elegant home in California, but very little serious attention has been given to the story of a dream connected with the discovery of the property.

**In General.**

"Freak" is the term now generally used on the lakes to cover the McDougall barges, monitors and other freight craft of late design.

A 97-ton cruising yawl is being built in England which will be sumptuously furnished and sent to the world's fair at Chicago as a specimen of British yacht building.

Work on two vessels of 8,000 tons each, to be used by the Inman line for cargo and immigrant traffic between Liverpool and Philadelphia, will begin shortly on the Clyde.

Again the City of Paris has broken all previous records in time between Queenstown and New York. Her latest time, made last week, is five days, fifteen hours and fifty-eight minutes.

The executors of John Roach, the shipbuilder, will receive from his assignees, George W. Quintard and George E. Weed, about \$2,000,000, the surplus of his assigned estate.

The Manchester ship canal is 35½ miles long, 170 feet wide at the surface, and 26 feet minimum depth. It will cost when completed over \$75,000,000, but will probably pay interest on the investment at the rate of about 4 per cent.

Capt. William A. Andrews, the navigator, who recently crossed the Atlantic in a 14-foot dory from Atlantic City, N. J., to Lisbon, and who arrived at Palos on Oct. 4, announces that he will cross the Atlantic again in a small aluminum boat.

During the year 1890 alone six steamers of a total value of \$3,346,000 were built by William Cramp & Sons, Philadelphia. There was also \$280,000 worth of repair work done last year, making a grand total of \$3,626,000.—American Shipbuilder.

The "stockless" anchors for the Cunarder Campania and her sister ship Lucania weigh nearly six and a half tons each. These are the largest stockless anchors in the world, and will be tested to the highest proof strain that can be given at Lloyd's machines.

Two powerful Schuckert search lights of 3 and 4 feet diameter respectively, were installed at the Chicago exposition during the dedicatory ceremonies. A member of the Schuckert company says that his firm will have in Chicago next summer, a lamp 6 feet in diameter, which will throw a strong light sixty miles.

The whaleback building by the Pacific Steel Barge Company at the Everett, Wash., shipbuilding yard will be 360 feet long, 42 feet beam and 26½ feet deep, and will be driven by engines of 1,800 horse power. She will have some cabin accommodations, and will be called the Everett.

Maine will have an interesting marine exhibit at the world's fair. The Industrial Journal of Bangor says that all the old shipbuilding ports of the state will be visited and models of all kinds of marine craft that have gone out from Maine shipyards will be collected for this display. Some of the models will be set up and arranged so as to show a vessel in the various stages of construction, from the skeleton to the fully rigged ship. Old paintings of some of Maine's more famous craft, like the clippers built for the China tea trade, will be on exhibition. While Bath will naturally be the largest contributor, every place that ever did any ship building, from Kittery to Eastport, will be visited and relics pulled out from barn chambers, all in honor of Columbus, the greatest of navigators.

The new ocean flyers of the Inman line, which will be constructed for the International Navigation Company by the William Cramp & Sons Ship and Engine Building Company, will be built under conditions which, as far as known, have never yet existed between ship builders and ship owners in this country. There will be no contracts signed between the Cramps and the International Navigation Company, the relations between these corporations making the building of these five vessels possible without the signing of contracts. Charles H. Cramp, president of the ship building company, is authority for this statement: "We will build probably five steamships for the Inman line, and when they are finished we will send in our bill for the work. It is quite an unusual thing to do on this side of the water, but Harland & Wolf, the celebrated ship builders of Belfast, Ireland, do it not infrequently. They have built several steamships of the best class for the White Star line without having any contract before hand, and turned in their bill for the work when finished."—American Shipbuilder.

**Reminiscence of the Wetmore.**

William G. Watt, one of the crew of the Wetmore, gives reminiscences of the whaleback's voyages in a recent number of the American Shipbuilder. After the boat made her triumphal trip to England and back she carried Jay Gould and a party of capitalists down the sound, proceeding to Philadelphia, where, he says, "train load after train load of heavy machinery and iron pipes were stowed in her hold. Then the upper hold was filled with coal, and a deck cargo of several hundred tons more, until the main deck was barely three feet out of water. We sailed for Puget sound just one month after leaving Brooklyn, and promptly encountered a furious gale, which lasted a week; our deck cargo of coal was carried away and the door of the mate's room was stove by a sea which flooded several of the rooms on the superstructure. After that balmy breezes and fair weather prevailed. We crossed the line Oct. 7. Neptune came on board to shave and scrub the greenhorns and make them his true sons. On the morning of Oct. 20 we entered Montevideo harbor for water and fresh provision. The revolution there of a few weeks previous hardly proved more of a sensation than what was at first mistaken for a Yankee torpedo boat. Soon we were surrounded by a flotilla of nondescript craft. I noticed one fat old fellow in a small boat who surveyed us with a what-the-devils'-that expression for fully five minutes, then he burst into a paroxysm of laughter, slapping his knees again and again, until his mirth proved contagious to all on board."

**Capt. McDougall's View of Protection.**

In an interview in Inland Ocean of Superior, Wis., Capt. Alex. McDougall, inventor of the whaleback type of vessel, says: "In Great Britain today most of the iron ore used in the manufacture of steel ship plates comes from the distant mines of Bilbao, Spain, and coal at the pit's mouth costs as much as it does in our lake country. Yet they sell material for building ships for 1.25 cents per pound. We are now paying 2 cents for material, and we have the finest ore in the world at our very doors. All classes of shipbuilding labor in Great Britain is less than half the price we are paying for it in any of our yards. If the duty was removed from manufactured iron and steel it would pay us to import and pay the freight all the way to West Superior for all the ship material, including machinery that we use. There are more ships laid up in Great Britain today than are owned in the United States, and more idle ship builders in Glasgow alone than were ever employed in all America."

**Notices to Mariners.**

Although no official announcement has been made by the light-house board or the district officers relative to the discontinuance of lights and other aids to navigation, it is expected by vessel owners that, as a result of the understanding reached last fall on this subject, all lights, light-houses and fog signals will remain in operation well into December, until all vessels have quit running.

About Dec. 6, the light at Kenosha (Southport) light-station, on Warrenton island, north side of the entrance to Kenosha harbor, western shore of Lake Michigan, will be changed from a fixed white light varied by a white flash every 90 seconds to a fixed white light varied by a flash every 45 seconds. The order of the light will not be changed.

On or about Dec. 4, 1892, the light at Milwaukee light-station, near the extreme north point of Milwaukee bay, western shore of Lake Michigan, will be changed from a fixed white light, varied by a white flash every forty-five seconds. The order of the light will not be changed.

On Oct. 19, the fixed white lens-lantern light on the northern end of the outer breakwater, Chicago harbor, was removed to the emergency in take waterworks crib, an extension northwesterly of the outer breakwater. The focal plane of the light is now 45 feet above lake level.

It has been determined to place the light to be established Nov. 10, 1892, on the outer end of the western pier at Conneaut, Lake Erie, at an elevation of 20 feet above the lake level, instead of 15 feet, as heretofore stated.

ANY ONE SENDING TWO ADDRESSES AND \$4 TO THE MARINE REVIEW, 516 PERRY-PAYNE BUILDING, CLEVELAND, WILL, IN ADDITION TO HAVING THE BEST MARINE PAPER SENT TO THEM FOR A YEAR, RECEIVE A COPY OF WASHINGTON IRVING'S LIFE AND VOYAGES OF CHRISTOPHER COLUMBUS.

**Specification for the 20 and 21-foot Channel.**

An advertisement elsewhere in this issue calls for proposals for excavating the ship canal of 20 and 21 feet depth between Chicago, Duluth and Buffalo. Work on this great improvement, which is to cost in round numbers \$3,400,000, will begin on or before May 15, 1893, and will be entirely finished at the end of the third working season, along with the completion of the Hay lake and St. Mary's Falls canal improvements. The specifications estimate the total excavation in the different channels at 3,450,366 cubic yards, covering 19 2-5 miles in length, with a minimum width of 300 feet, which is increased at the lower end of Lake Huron and above the St. Clair Flats canal to 800 (and even 2,400 feet) to suit special requirements at these points. Bids for the different sections of the work will be opened at the office of Gen. Poe, Detroit, during eight days from the 9th to the 17th of December. The general instructions for bidders, which can be secured from Gen. Poe, cover six large pages in print. The channels to be dredged are divided into eight sections. Bids will be considered separately for each section, and the contract for each will be awarded independently of the others. Bidders may submit bids for one or more sections, but they must be entirely separate. The following summary of the location, character of work and material to be excavated in the different sections will tend to show the magnitude of this great dredging project:

**FIRST SECTION**—This section comprises the improvement of two shoals in St. Mary's river, Michigan, above the canal. The upper shoal lies northwesterly, and the lower shoal northeasterly from old Round island light-house. The work to be done consists in excavating a channel within the side and end lines prescribed by the United States agent in charge, said channel to have a bottom width of 300 feet and a total length of about 3,000 feet, the estimated excavation being 90,000 cubic yards, bank measure, more or less. The greatest distance to the dumping ground will not exceed two miles, and the average distance will not exceed one mile. The material to be removed consists of boulders, clay, sand, gravel, and possibly hard pan, all in unknown proportions.

**SECOND SECTION**—This section comprises the improvement of Little Mud lake between the lower end of Sugar island and the lower end of the "Dark Hole," St. Mary's river, Michigan. The work to be done consists in excavating a channel within the side and end lines prescribed by the United States agent in charge, said channel to have a bottom width of 300 feet, and a length of about 18,500 feet, the estimated excavation being 380,000 cubic yards, bank measure, more or less. The greatest distance to the dumping ground will not exceed two miles, and the average distance will not exceed one mile. The material to be removed consists of sand, gravel, boulders and hard pan, all in unknown proportions.

**THIRD SECTION**—This section comprises the improvement of a reef abreast of Sailors' Encampment island, St. Mary's river, Michigan. The work to be done consists in excavating a channel between the side and end lines prescribed by the United States agent in charge, said channel to have a bottom width of 300 feet and a length of about 3,000 feet, the estimated excavation being 90,366 cubic yards, bank measure, more or less. The greatest distance to the dumping grounds will not exceed two miles, and the average distance will not exceed one mile. The material to be removed consists mainly of limestone bed rock.

**FOURTH SECTION**—This section comprises the improvement of a shoal about one and one-half miles below Sailor's Encampment, in Mud lake, St. Mary's river, Michigan. The work to be done consists in excavating a channel between the side and end lines prescribed by the United States agent in charge; said channel to have a bottom width of 300 feet and a length of about 4,000 feet, the estimated excavation being 67,000 cubic yards, bank measure, more or less. The greatest distance to the dumping grounds will not exceed two miles, and the average distance will not exceed one mile. The material to be removed consists of mud, sand, clay and gravel, all in unknown proportions.

**FIFTH SECTION**—This section comprises the improvement of a number of small shoals at the foot of Lake Huron. The work to be done consists in excavating a channel between the side and end lines prescribed by the United States agent in charge; said channel to have a bottom width of 2,400 feet and a length of about 6,000 feet, the estimated excavation being 256,000 cubic yards, scow measure, more or less. The greatest distance to the dumping ground will not exceed two miles, and the average distance will not exceed one mile. The material to be

removed consists of sand, clay, gravel, boulders and probably hard pan, all in unknown proportions.

**SIXTH SECTION**—This section comprises the improvement of St. Clair Flats, Michigan. The work to be done consists in excavating a channel within the side and end lines prescribed by the United States agent in charge; said channel to begin at the deep water of St. Clair river, above St. Clair Flats canal, with a bottom width of not more than 650 feet, thence gradually narrowing to the canal, a length of about 3,000 feet; thence for the full width of the canal through its entire length, about 7,200 feet; thence gradually widening to a bottom width of not more than 800 feet at the deep water of Lake St. Clair, a further length of about 17,000 feet; the total length being about 27,000 feet, and the estimated excavation being 950,000 cubic yards, scow measure, more or less. The greatest distance to the dumping ground will not exceed three miles, and the average distance will not exceed two miles. The material to be removed consists of clay and sand in unknown proportions.

**SEVENTH SECTION**—This section comprises the improvement of Grosse point flats, Lake St. Clair, Michigan. The work to be done consists in excavating a channel within the side and end lines prescribed by the United States agent in charge; said channel to have a minimum width at bottom of 300 feet and a length of about 29,000 feet, but the engineer officer in charge may require the bottom width to be increased to not more than 800 feet, if the price bid so warrants; the estimated excavation for the width of 300 feet being 1,200,000 cubic yards, scow measure, more or less, and for the width of 800 feet 2,900,000 yards, scow measure. The greatest distance to the dumping ground will not exceed three miles, and the average distance will not exceed two miles. The material to be removed consists of clay, gravel, sand and some boulders, with possibly some hard-pan.

**EIGHTH SECTION**—This section comprises the improvement of the bar at the mouth of Detroit river. The work to be done consists in excavating a channel within the side and end lines prescribed by the United States agent in charge; said channel to have a minimum width at bottom of 300 feet and a length of about 26,500 feet, but the engineer officer in charge may require the bottom width to be increased to not more than 800 feet, if the price bid so warrants; the estimated excavation for the width of 300 feet being 411,000 cubic yards, scow measure, more or less, and for the width of 800 feet 1,086,000 cubic yards, scow measure. The greatest distance to the dumping ground will not exceed three miles, and the average distance will not exceed two miles. The material to be removed consists of sand, clay, gravel and boulders, all in unknown proportions.

A late supplement to the Record of American and Foreign Shipping, published by the American Shipmasters' Association of New York, one of the organizations that has begun to classify lake vessels, notes the dimensions, tonnage, etc., of the lake steamer Wyandotte and car ferry Ann Arbor, No. 1, but does not give a rating to either of them, as they were not constructed under the rules of the association.

U. S. ENGINEER OFFICE, HICKOX BUILDING, 185 Euclid Avenue, Cleveland, Ohio, November 1, 1892. Sealed proposals for dredging in straight channel through Maumee Bay, for Toledo Harbor, Ohio, will be received at this office until 2 p.m. of Thursday, December 1, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. JARED A. SMITH, Corps of Engineers, U. S. A.

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**A Good Second-Hand MARINE BOILER,**  
Good for at least 100 Pounds Steam, for use in a Steambarge.

State Size, Age, Condition and Price.

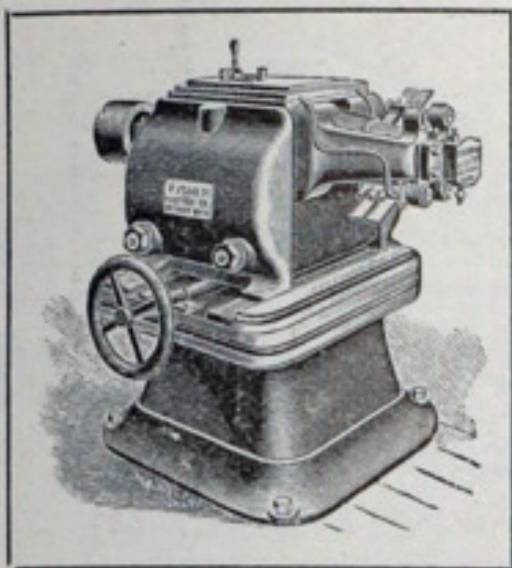
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516 Perry-Payne Bldg., Cleveland, O.

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One 12-inch steam rotary pump, made by the Silsby Manufacturing Company, Seneca Falls, N.Y. Capacity, 2,500 gallons of water per minute. Pump mounted on an iron truck, the front wheels of which run under, so it can be turned in its own length. Engine and pump work both ways, so that suction can be used as discharge or discharge as suction. Complete with all fittings, except boiler and connections. **PRICE LOW.** Apply to

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One direct connected Twin Set.

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One direct connected Set. One Search Light.

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ILLINOIS CENTRAL SLIP C.

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Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind or wishing to purchase vessels, are invited to take advantage of the same offer. Employers in need of professional men or men who want positions may avail themselves of the opportunities offered. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 516 Perry-Payne Building, Cleveland, O.

**150—WANTED**—A responsible man to take an interest in a new marine invention; nothing like it in the market.

**151—FOR SALE**—2 10 by 10 engines, wheels, shafts 3½ inches, link motion; and boiler 42 inches by 10 feet 6 inches marine, 80 pounds steam.

**152—FOR SALE**—Dredge, 1½ yard dipper, good power, 130 feet steam.

**153—FOR SALE**—One Lighter, 100x20x5, four years old.

**154—FOR SALE**—Yacht, 32 feet long, 6 beam, 4 deep. Engine 6 x 6. Boiler upright; 130 lbs. steam. To be had for \$400.

**155—FOR SALE**—A 17x20 High Pressure Marine Engine—very cheap.

**156—FOR SALE**—At a bargain, 30-foot sloop yacht, built this year and in first-class condition.

**157—WANTED**—Good second-hand Marine boiler, tested to 100 pounds, for use in a steambarge.

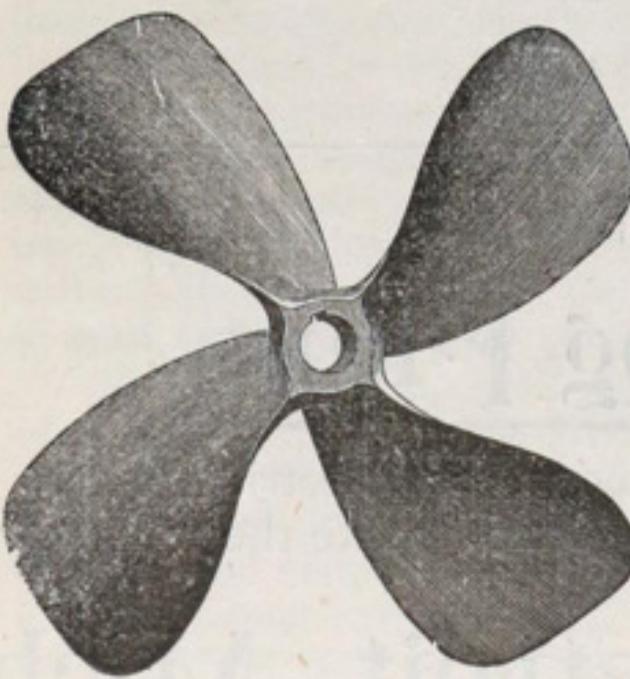
**158—FOR SALE**—12-inch Silsby Wrecking Pump, with capacity for 2,500 gallons. Price low.

**159—FOR SALE**—Lighter, 72 feet long, 16 feet beam, and 5 feet deep. Will sell for \$300.

U. S. ENGINEER OFFICE, 34 WEST CONGRESS ST., Detroit, Mich., November 9, 1892. Sealed proposals for furnishing all labor, materials, and appliances, and excavating a ship channel 20 and 21 feet deep between Chicago, Duluth and Buffalo, will be received at this office until 2 p.m., standard time, on the following dates, and then publicly opened: For third section, Sailors' Encampment, on December 9, 1892; for seventh section, Grossepoint Flats, on December 10, 1892; for sixth section, St. Clair Flats, on December 12, 1892; for eighth section, mouth of Detroit River, on December 13, 1892; for second section, Little Mud Lake, on December 14, 1892; for fifth section, foot of Lake Huron, on December 15, 1892; for fourth section, Mud Lake Shoal, on December 16, 1892; for first section, Round Island Shoals, on December 17, 1892. Specifications, blank forms, and all available information will be furnished on application to this office. O. M. POE, Colonel Corps of Engineers, Bvt. Brig.-General, U. S. A.

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**MARINE ENGINES,**  
High and Low Pressure Engines,  
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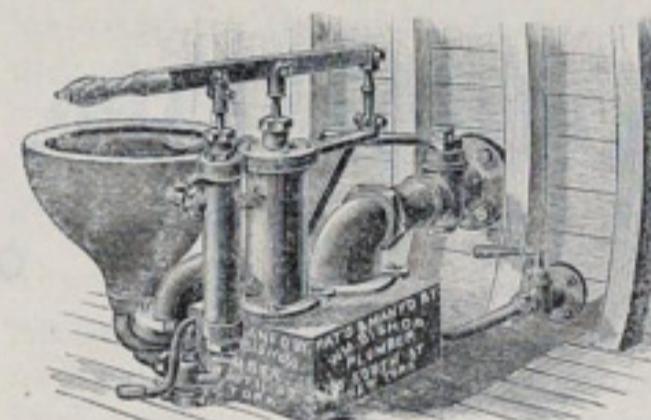
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**COMBINATION PUMP WATER CLOSET**

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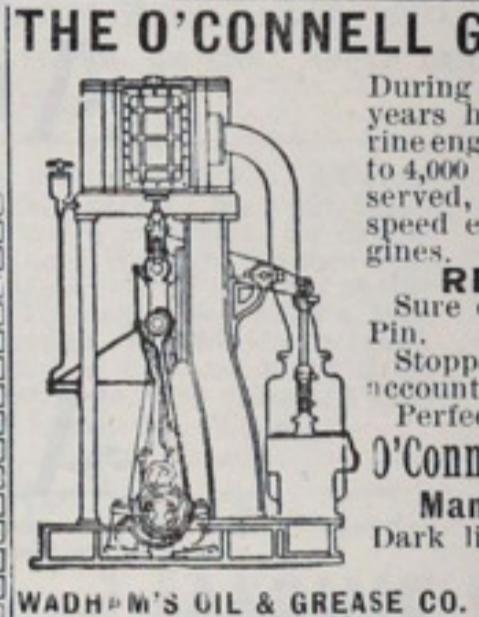
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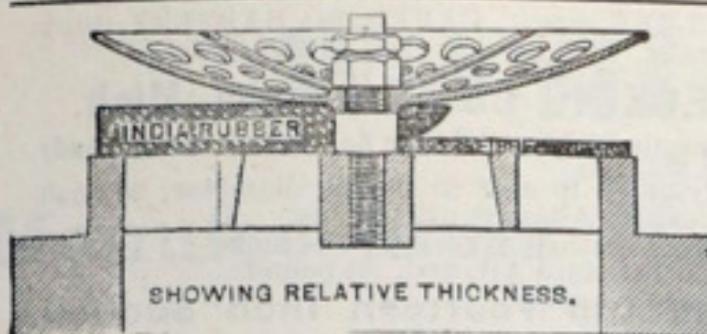
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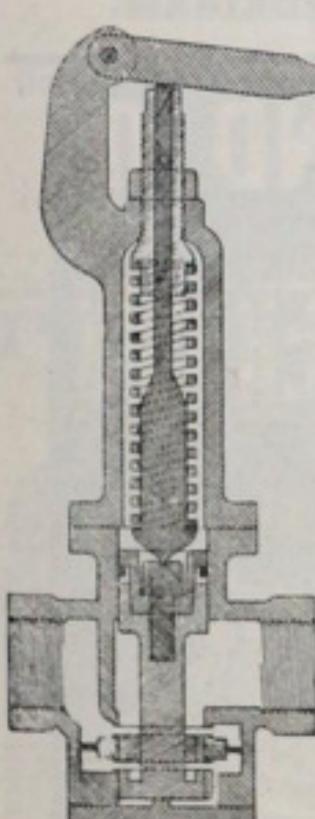
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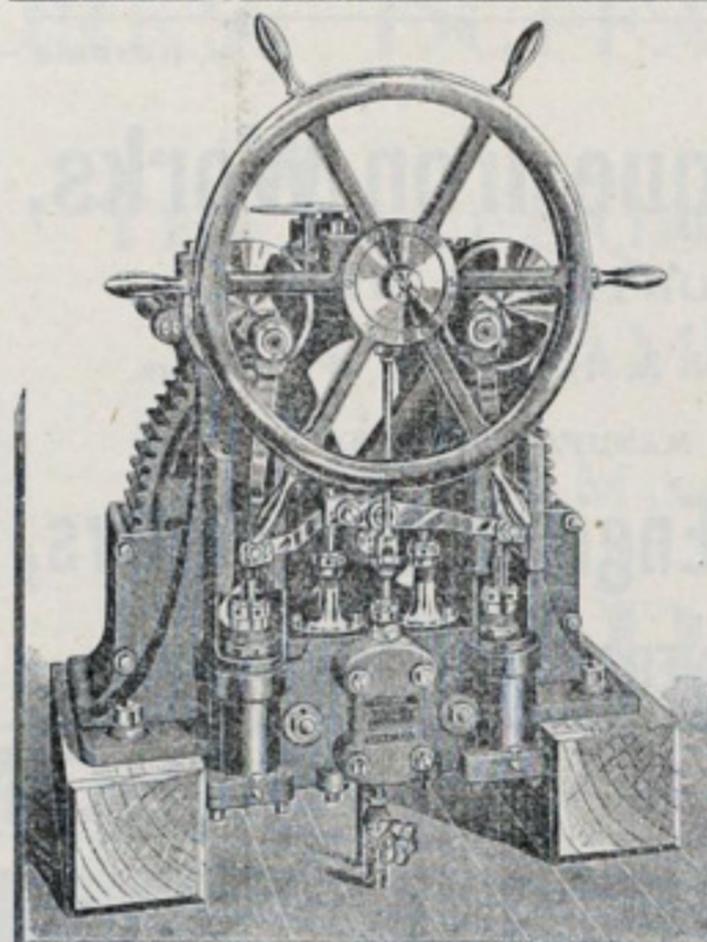
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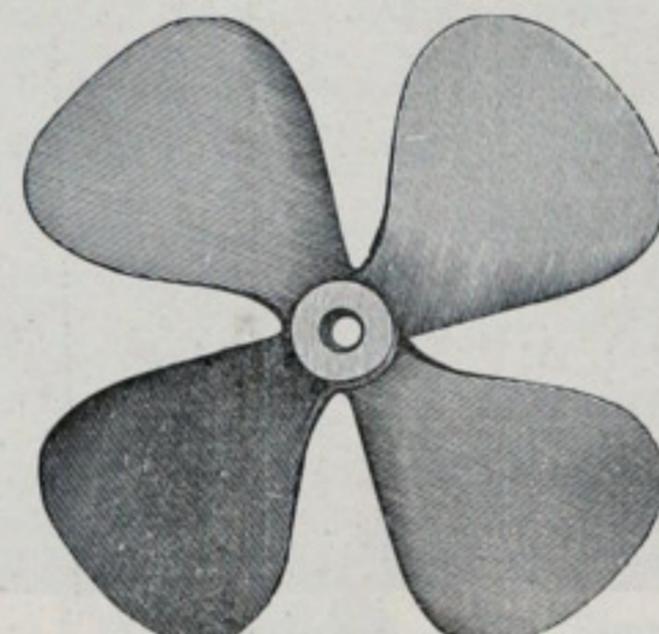
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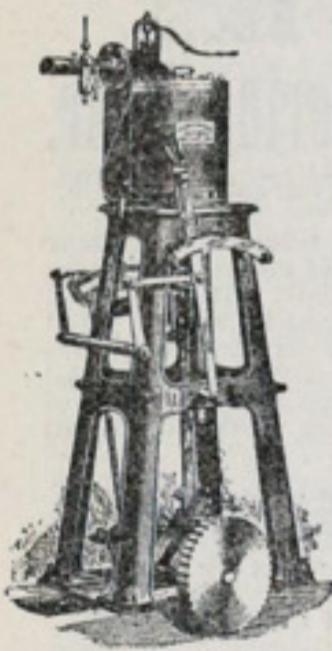
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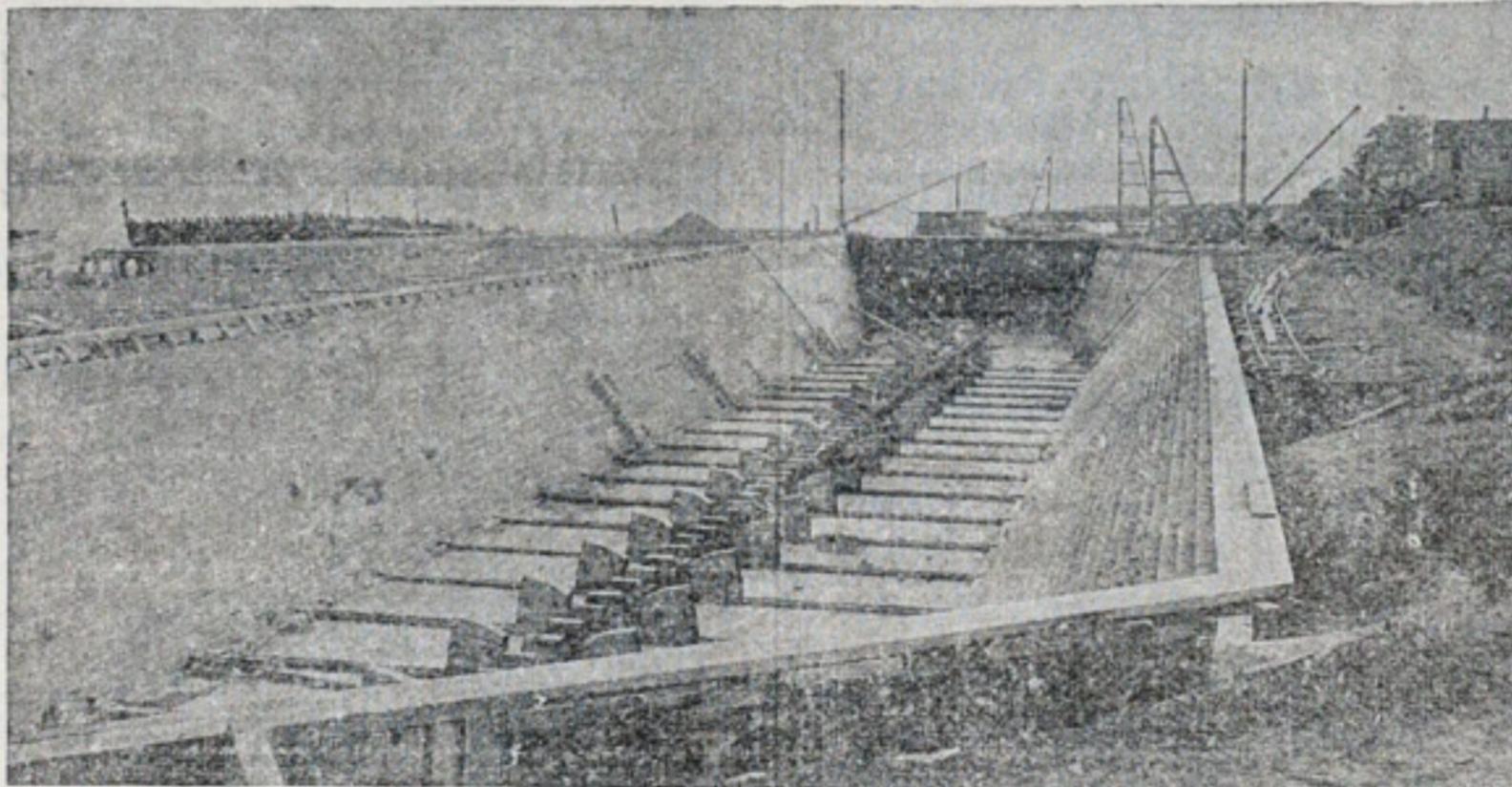
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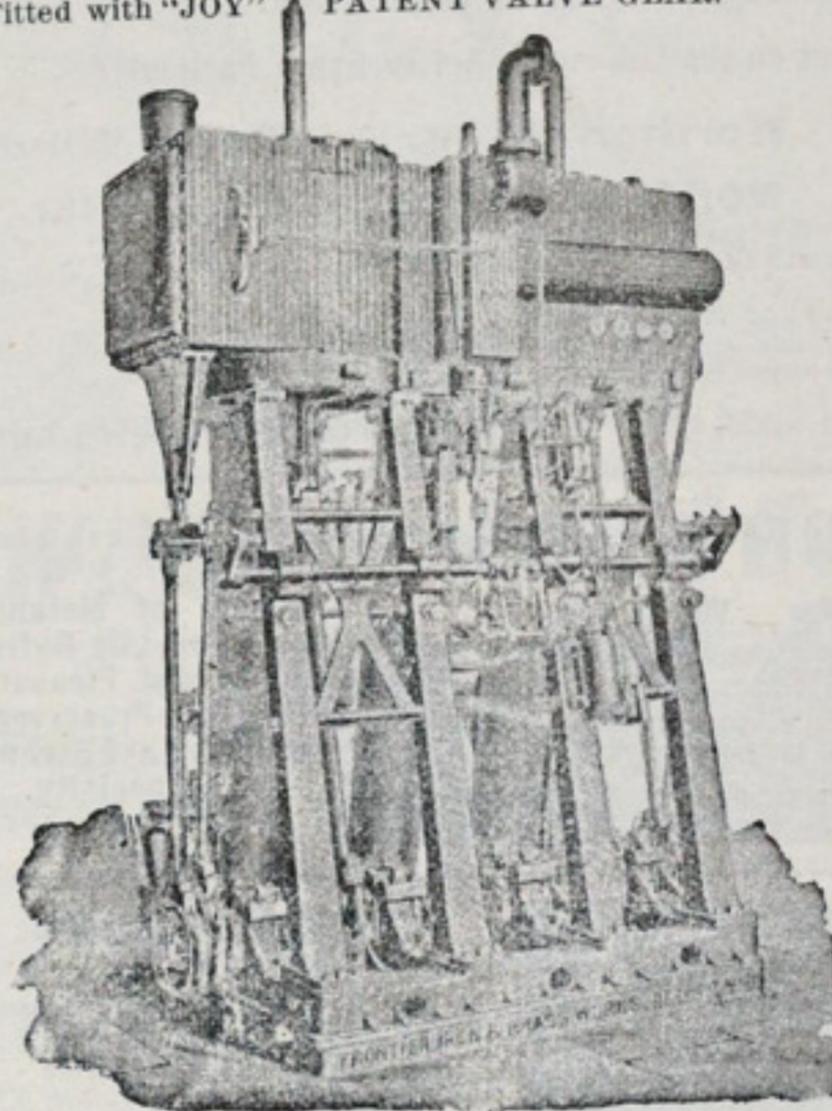
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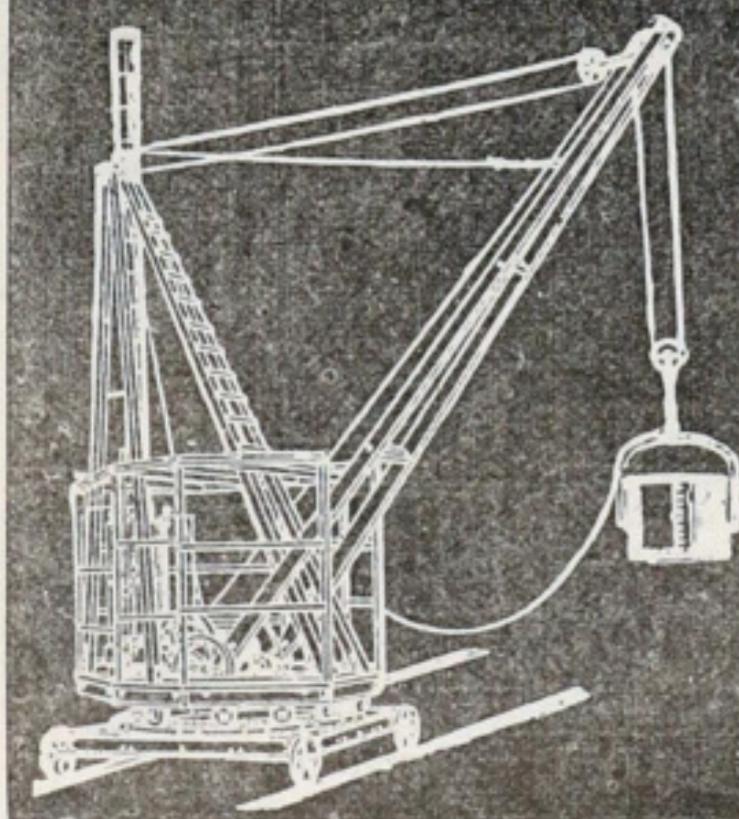
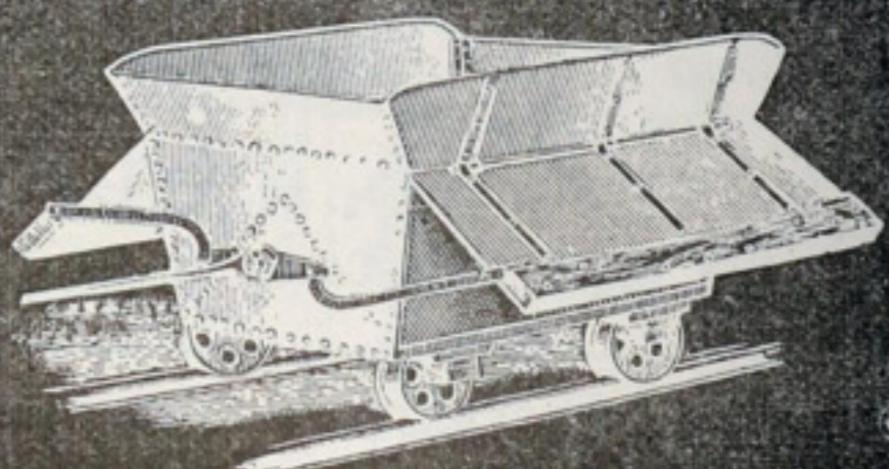
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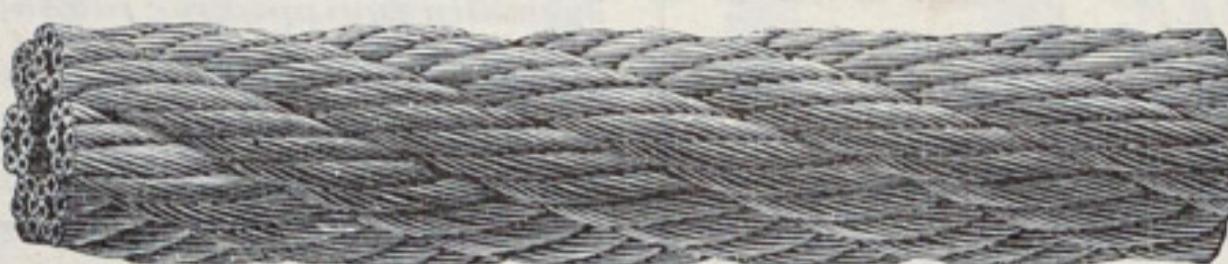
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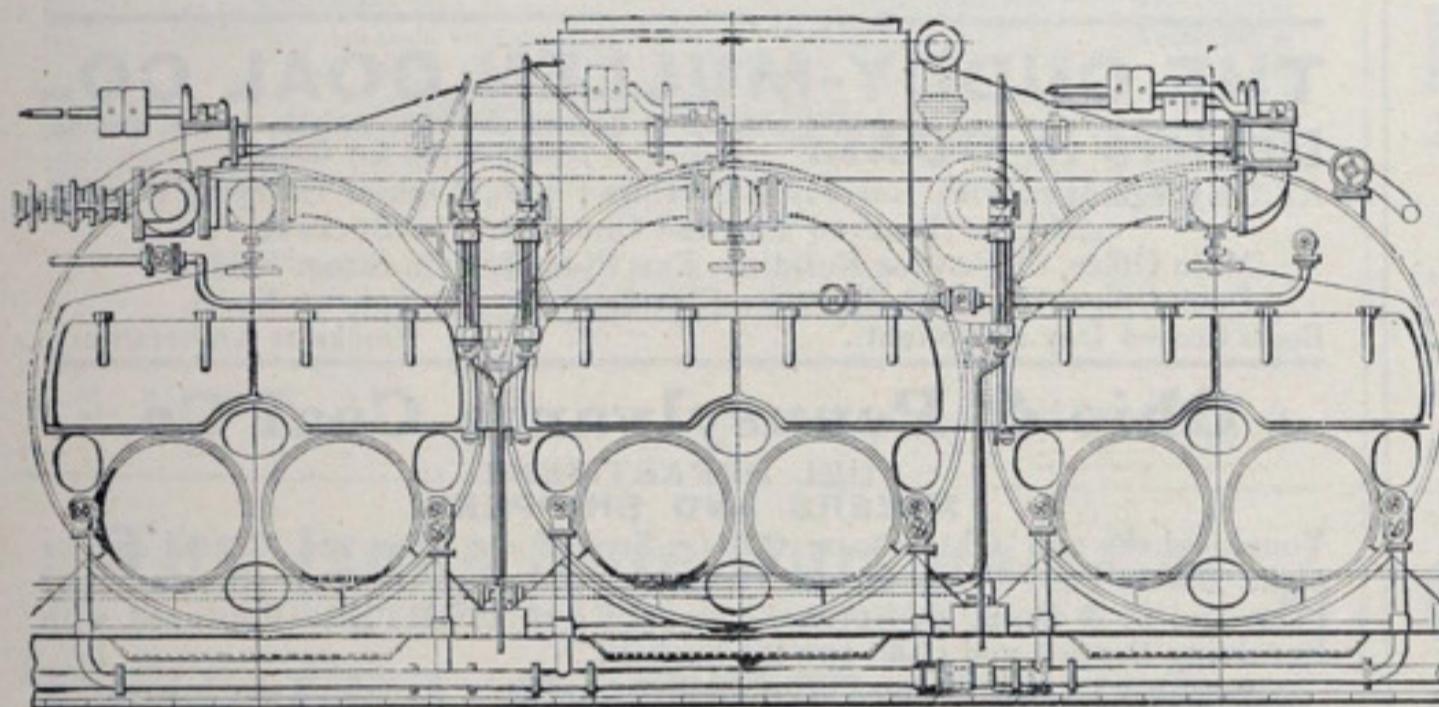
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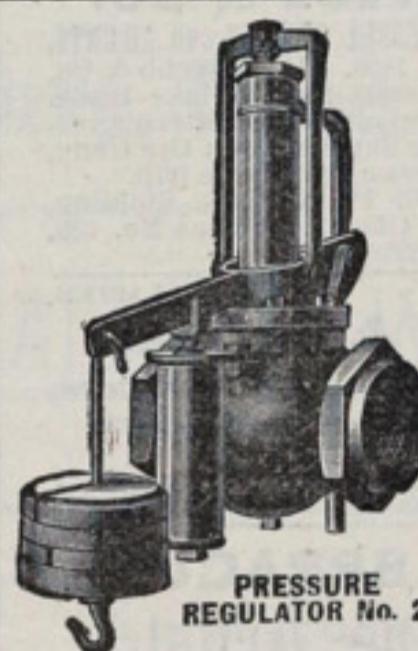
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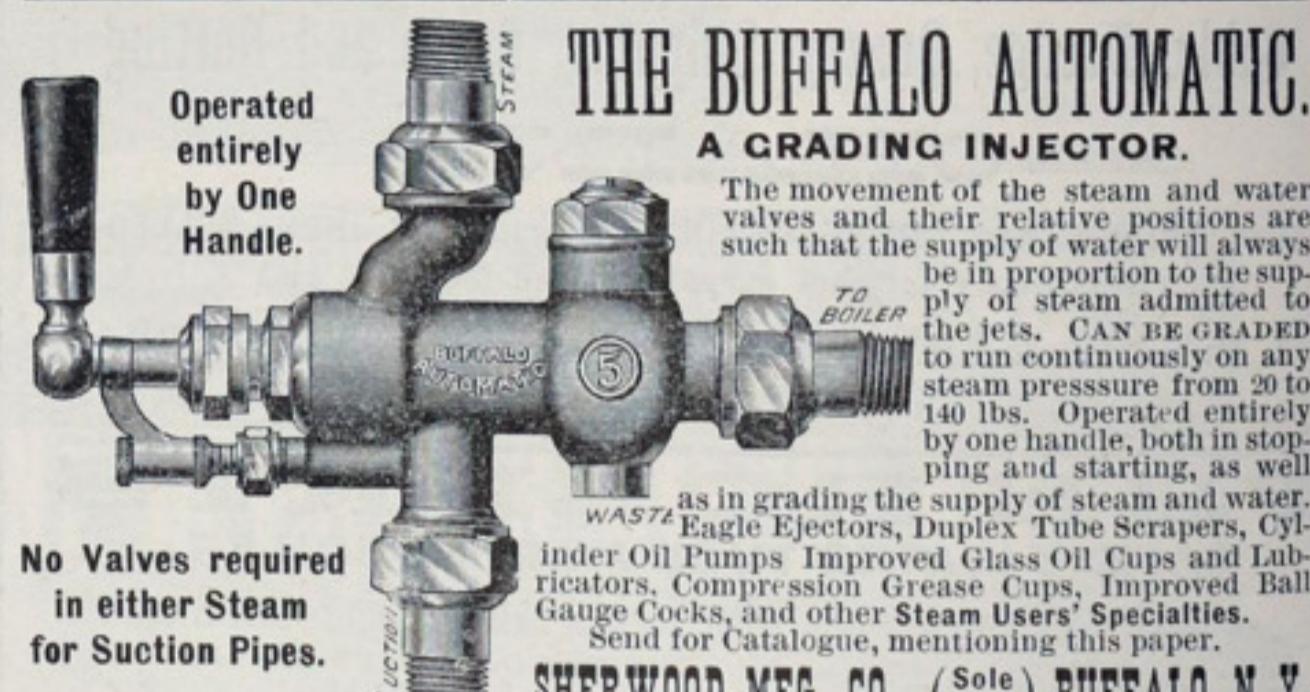
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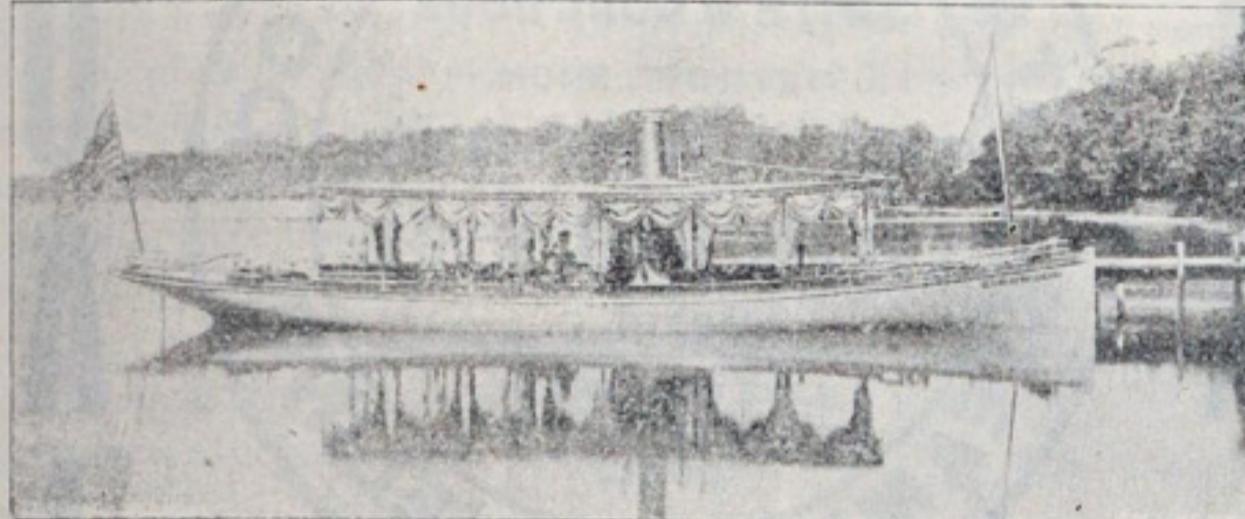
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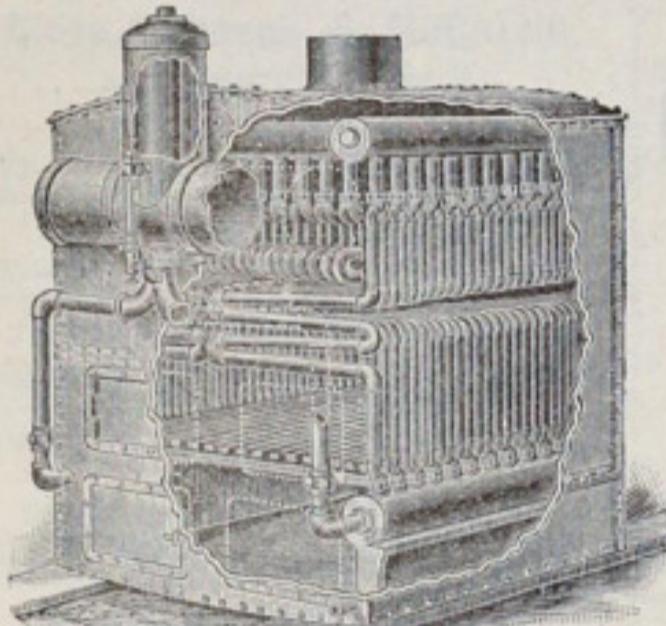
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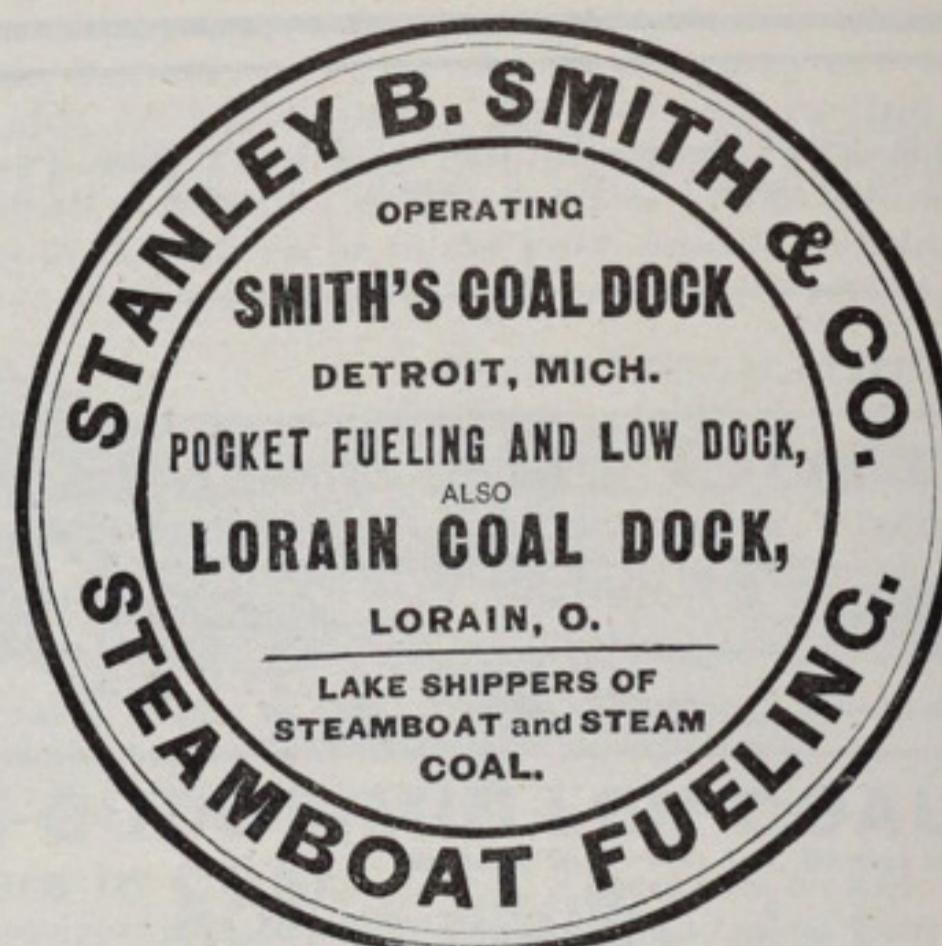
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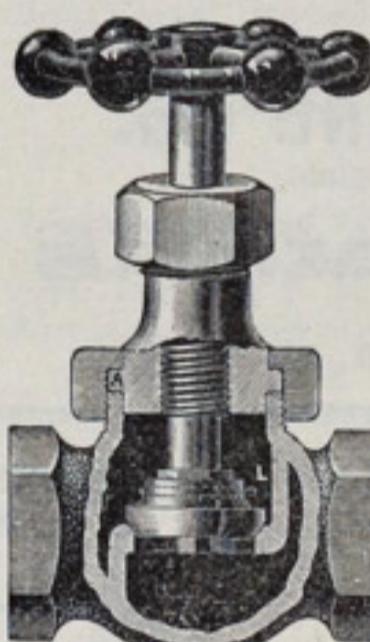
The editor of the MARINE REVIEW has examined Patterson's Nautical Dictionary thoroughly, and with pleasure recommends it to any one having any connection with marine affairs.

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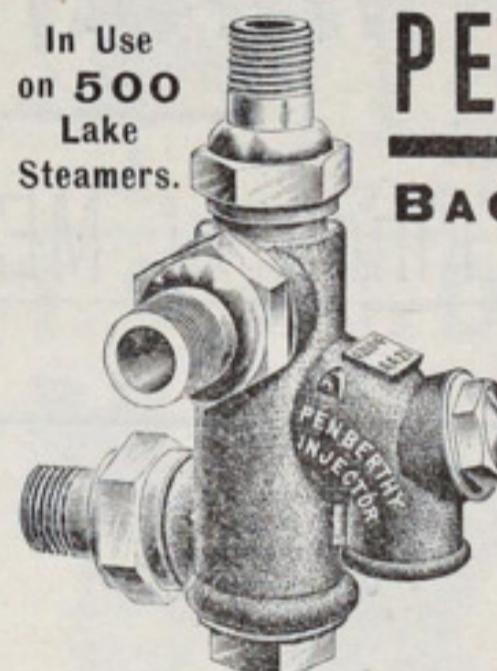
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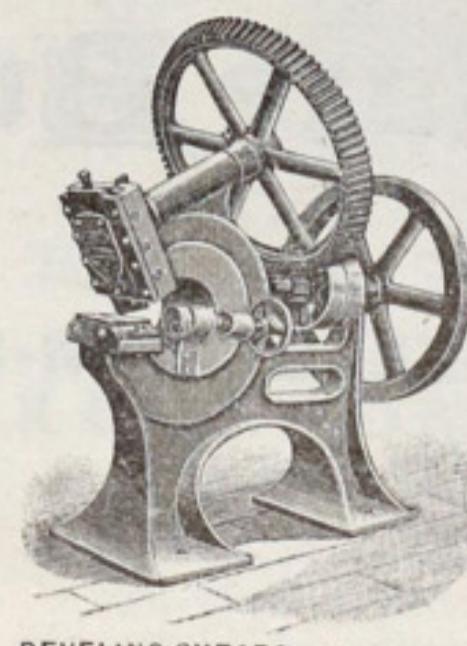
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